(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
27 December 2002 (27.12.2002)

PCT

(10) International Publication Number
WO 02/102486 A1

(51) International Patent Classification[7]: A63H 3/52

(21) International Application Number: PCT/US02/20106

(22) International Filing Date: 19 June 2002 (19.06.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/884,191 19 June 2001 (19.06.2001) US

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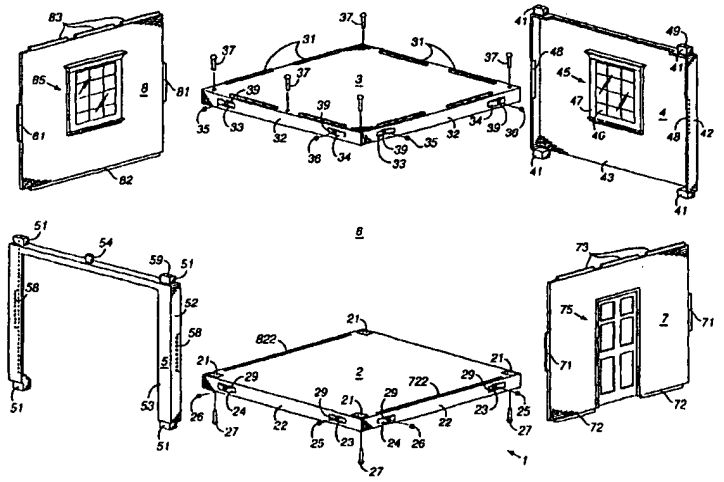
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MODULAR HOUSE TOY



(57) Abstract: A modular house toy includes a fixed supporting structure (1) made of a solid floor(2), a solid ceiling (3), a solid back wall (4) connecting the floor to the ceiling, and an open arch (5) connecting the floor to the ceiling. The back wall (4) and/or the arch (5) permanently connect the floor to the ceiling in respective connection planes. A modular house toy configuration includes at least two fixed supporting structures (1). One fixed supporting structure is removably connected to another in six positions. Preferably, the floor and the ceiling have the same shape and the back wall and the arch have the same shape to allow repetitious and modular interlocking of one modular house toy to another module house toy. Wall and arch extensions (41, 51) are inserted into floor depressions (21) and other wall and arch extensions are inserted into ceiling depressions to connect the floor to the ceiling.

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Modular House Toy

Technical Field:

The invention relates to toy houses, and more particularly, to a modular toy house.

Background Art:

Different toy houses have been made in the past. Most of the existing modular-like toy houses, however, exist as multi-piece construction sets. See, for example, U.S. Patent No. 1,898, 297 to Fox, U.S. Patent No. 3,020,601 to Stambaugh et al., U.S. Patent No. 3,571,965 to Gibb, U.S. Patent No. 4,270,302 to Dandia, U.S. Patent No. 4,306,372 to Lin, and U.S. Patent No. 4,487,690 to Stoffle et al.

One such multi-piece construction set is disclosed in U.S. Patent No. 5,876,261 to Bach et al., which discloses a self-supporting grating structure that, when fully assembled, includes a bottom plate, four columns, four girders, and one or more wall elements. The assembled structure is intended to be disassembled in its entirety. The four girders make up the open ceiling, and the four columns make up the structure for holding the four-girder assembly at a distance above the bottom plate. A significant feature of Bach et al. is that the building must be accessible from above, in other words, the support girders are disposed such that there is unimpeded access to the interior space from above.

Architectural models are also present in the prior art. See, for example, U.S. Patent No. 2,315,463 to Tingley et al., U.S. Patent No. 3,295,225 to Sodergren, U.S. Patent No. 3,902,291 to Zucht, and U.S. Patent No. 4,650,437 to Sitkus. Other types of doll houses exist as set forth in U.S. Patent No. 3,526,054 to Raman, U.S. Patent No. 3,996,693 to Walmer, and U.S. Patent No. 6,073,404 to Norfleet.

The prior art, however, does not provide a modular house toy having a fixed supporting structure that can be easily combined to create a structure larger than a single fixed supporting structure, and to do so in an easy and inexpensive manner, while simultaneously providing sophisticated household objects/props and electronic lights and sounds.

What is needed is a modular house toy having a secure foundation that enables easy modularity for constructing a multi-part house and that allows for the addition and inclusion of sophisticated electronics, including, for example, lighting and sound effects.

Disclosure of the Invention:

It is accordingly an object of the invention to provide a modular house toy that overcomes the hereinafore-mentioned disadvantages of the heretofore-known devices of this general type and that provides an inexpensive and structurally strong modular house toy.

With the foregoing and other objects in view, there is provided, in accordance with the invention, a modular house toy including a fixed supporting structure having a solid floor, a solid ceiling, a solid back wall connecting the floor to the ceiling, and an open arch connecting the floor to the ceiling.

In accordance with another feature of the invention, the back wall and/or the arch permanently connects the floor to the ceiling.

In accordance with a further feature of the invention, the connection of the floor to the ceiling with the back wall is in a first vertical connection plane, and the connection of the floor to the ceiling with the arch is in a second vertical connection plane different from the first vertical connection plane.

In accordance with an added feature of the invention, the floor has floor depressions, the ceiling has ceiling depressions, the back wall has wall extensions, and the arch has arch extensions. At least one of the wall extensions is inserted into at least one of the floor depressions and at least one of the wall extensions is inserted into at least one of the ceiling depressions to connect the floor to the ceiling. Further, at least one of the arch extensions is inserted into at least one of the floor depressions and at least one of the arch extensions is inserted into at least one of the ceiling depressions to connect the floor to the ceiling.

In accordance with an additional feature of the invention, the floor has a top side with two pairs of floor depressions. The ceiling has a bottom side with two pairs of ceiling depressions. The back wall has two lower wall extensions inserted into a first of the two pairs of floor depressions and two upper wall extensions inserted into a first of the two pairs of ceiling depressions to connect the floor to the ceiling. The arch has two lower arch extensions inserted into a second of the two pairs of floor depressions and two upper arch extensions inserted into a second of the two pairs of ceiling depressions to connect the floor to the ceiling.

In accordance with yet another feature of the invention, the floor and the ceiling have the same shape and the back wall and the arch have the same shape to allow repetitious and modular interlocking of one modular house toy to another module house toy.

With the objects of the invention in view, there is also provided a modular house toy configuration including at least two of the fixed supporting structures where the first fixed supporting structure is removably connected to the second fixed supporting structure.

In accordance with a concomitant feature of the invention, the floors and the ceilings of the multiple structures have the same shape and the back walls and the arches of the multiple structures have the same shape to allow repetitious and modular interlocking of one modular house toy to another module house toy.

Other features that are considered as characteristic for the invention are set forth in the appended claims.

Although the invention is illustrated and described herein as embodied in a modular house toy, it is, nevertheless, not intended to be limited to the details shown because various modifications and structural changes may be made therein without departing from the spirit of the invention and within the scope and range of equivalents of the claims.

The construction and method of operation of the invention, however, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

Brief Description of Drawing:

FIG. 1 is an exploded, perspective view of a disassembled fixed supporting structure of a modular house toy according to the invention;

FIG. 2 is an exploded, perspective view of an assembled fixed supporting structure of FIG. 1 with a roof structure;

FIG. 3 is a side elevational view of three connected fixed supporting structures of FIG. 1;

FIG. 4 is a fragmentary, enlarged, perspective view of a side wall connection of the fixed supporting structure of FIG. 1;

FIG. 5 is a fragmentary, perspective view of a bathroom embodiment of the assembled fixed supporting structure of FIG. 1 with the front arch and one side wall removed;

FIG. 6 is a fragmentary, perspective view of a kitchen embodiment of the assembled fixed supporting structure of FIG. 1 with the front arch and one side wall removed;

FIG. 7 is a fragmentary, perspective view of a living room embodiment of the assembled fixed supporting structure of FIG. 1 with the front arch and one side wall removed;

FIG. 8 is a fragmentary, perspective view of a nursery embodiment of the assembled fixed supporting structure of FIG. 1 with the front arch and one side wall removed;

FIG. 9 is a fragmentary, perspective view of a dining room embodiment of the assembled fixed supporting structure of FIG. 1 with the front arch and one side wall removed;

FIG. 10 is a fragmentary, perspective view of a master bedroom embodiment of the assembled fixed supporting structure of FIG. 1 with the front arch and one side wall removed;

Best Mode for Carrying out the Invention

In all the figures of the drawing, sub-features and integral parts that correspond to one another bear the same reference symbol in each case.

Referring now to the figures of the drawings in detail and first, particularly to FIG. 1 thereof, there is shown an exploded view of a modular house toy having a fixed supporting structure 1. The fixed supporting structure 1, as shown in FIG. 1 includes a solid floor 2, a solid ceiling 3, a solid back wall 4, and an open front arch 5, which, when assembled (see FIG. 2), together define an inner space 6.

"Fixed," with respect to the fixed supporting structure 1, is to be understood as meaning that a user will not remove any of the solid floor 2, the solid ceiling 3, the solid back wall 4, or the open front arch 5 after assembly and during

normal use of the modular house toy. "Assembly" is to be understood as meaning either assembly of the modular house toy at the manufacturing location or by a toy user immediately after opening the toy from its packaging and before normal use by the user.

"Solid," with respect to the solid floor 2, is to be understood as meaning that objects do not pass to the inner space 6 through the plane defined by the edges of the solid floor 2 from below the solid floor 2 without breaking the solid floor 2 itself. In other words, when the assembled modular house toy is set down on a solid surface larger than a footprint of the solid floor 2, all access by the user to the space below the solid floor 2 is impeded by the solid floor 2.

Similarly, "solid," with respect to the solid ceiling 3, is to be understood as meaning that objects do not pass through the plane defined by the edges of the solid ceiling 3, whether from above the solid ceiling 3 to below the solid ceiling 3, or from below the solid ceiling 3 to above the solid ceiling 3 without breaking the solid ceiling 3 itself. In other words, all access by the user to the inside space 6 of an assembled modular house toy through the plane defined by the edges of the solid ceiling 3 is impeded.

Likewise, "solid," with respect to the solid back wall 4, is to be understood as meaning that objects are not intended to pass to the inner space 6 through the plane defined by the edges of the solid back wall 4 from outside the solid back wall 4 without breaking the solid back wall 4 itself. In other words, all access by the user to the inside space 6 of an assembled modular house toy through the plane defined by the edges of the solid back wall 4 is impeded. There is an exception, however. The solid back wall 4 can have a window 45, as illustrated in FIG. 1. The window 45 is solid and objects cannot pass through the window 45 without breaking the window 45 itself or the solid back wall 4. In an alternative

embodiment, however, the window 45 or the panes 46 in the window 45 can be shuttered, either vertically or horizontally, similar to conventional household windows. In a shuttered embodiment, passage is possible, but only through the rectangular space defined by the window frame 47.

The solid floor 2 has a rectangular footprint. In a preferred embodiment, the footprint is square. The solid floor 2 has a depression 21 in each of the four top side corners. The solid floor 2 also has four side walls 22 that, in a preferred embodiment, are made as one piece with the top side of the solid floor 2. Particularly, the solid floor 2 is made in one piece in an injection molding process. In the preferred embodiment, portions of the side walls 22 make up two of the five walls defining the open box-shaped depression 21 in the floor. Each of the side walls 22 has a cavity 23 and a projection 24. Each cavity 23 preferably has an approximately rectangular shape, and each projection 24 also preferably has an approximately rectangular shape corresponding to each cavity 23. Thus, the cavities 23 and projections 24 are standardized with respect to one another. The projection 24 and cavity 23 can take any shape, however. Further, the cavity 23 and the projection 24 are preferably bow-shaped, as shown in FIG. 1.

Each of the cavities 23 has a recess 29 for receiving a fastener 25. The fastener 25 is, preferably, a circular magnet and the recess 29 has a circular shape corresponding to the magnet. Each of the projections 24 has a recess 29 for receiving a second fastener 26. Preferably, the fastener 26 is a circular ferrum and the recess 29 has a circular shape corresponding to the ferrum. Preferably, the cavities 23 and projections 24 are staggered around the side walls 22 of the solid floor 2. Thus, when two floors 2 are placed adjacent one another (see FIG. 3), a projection 24 of the first floor 2 mates with a cavity 23 of the second floor 2 and a projection

24 of the second floor 2 mates with a cavity 23 of the first floor 2 to produce a form lock. The projections 24, 34 can be slightly larger than the cavities 23, 33 such that a force lock is produced by a mating of the two. The magnet 25 and ferrum 26 provide an attractive force that holds the two floors 2 together in place.

The solid ceiling 3 has a rectangular footprint. Preferably, the footprint is square and corresponds to the shape of the solid floor 2. The solid ceiling 3 has four side walls 32 that, in a preferred embodiment, are made as one piece with the top side of the solid ceiling 3. The side walls 32 and the top side of the solid ceiling 3, therefore, form an open box. The open box is preferably made in an injection molding process and is used for housing electronic devices for the modular house toy. For example, the open box can house a battery pack, wires, and lights and/or sound devices for a ceiling or wall light, a television, a fireplace, a microwave, a stove, or any other electrically operable item that can be envisioned to exist in a room of a house. The solid floor 2 additionally or alternatively house such electronics in the cavity formed by the side walls 22 and floor 2.

The solid ceiling 3 has a non-illustrated depression in each of the four bottom side corners corresponding to the depression 21 in each of the four top-side corners of the solid floor 2. Preferably, portions of the side walls 32 and portions of the top side of the solid ceiling make up three of the five walls defining the box-shaped depression in the ceiling. Each of the side walls 32 has a cavity 33 and a projection 34. Each cavity 33 has an approximately rectangular shape, and each projection 34 also has an approximately rectangular shape corresponding to each cavity 23, 33. Preferably, the non-illustrated depressions are identical in shape to the depressions 21 in the solid floor 2.

Thus, the cavities 23, 33 and projections 24, 34 are standardized with respect to one another. The projection 34 and cavity 33 can take any shape, however. Further, the cavity 33 and the projection 34 are preferably bow-shaped, as shown in FIG. 1.

Also in a preferred embodiment, the cavities 23 and projections 24 on the solid floor 2 are staggered with respect to the cavities 33 and projections 34 on the solid ceiling 3. Each of the cavities 33 has a recess 39 for receiving a fastener 35. Preferably, the fastener 35 is a circular magnet and the recess 39 has a circular shape corresponding to the magnet. Each of the projections 34 has a recess 39 for receiving a second fastener 36. Preferably, the fastener 36 is a circular ferrum and the recess 39 has a circular shape corresponding to the ferrum. Preferably, the cavities 33 and projections 34 are staggered around the side walls 32 of the solid ceiling 3.

The open box can be closed by a non-illustrated ceiling plate that is securably fastened to either the side walls 32, the top side of the solid ceiling 3, or both. Thus, a protective enclosure is formed for electronics, or any other device, housed therein.

The top side of the solid ceiling 3 has at least one flange 31 projecting transversely to the plane of the top side. Preferably, the top side has two flanges 31 projecting transversely to the plane of the top side near each of the four edges of the top side, for a total of eight flanges 31 as shown. The flanges 31 are used, for example, to secure a roof section 9 (see FIG. 2) from easily falling off or to secure a second modular house toy 1 on top of a first modular house toy 1 as shown in FIG. 3.

The solid back wall 4 has four plugs 41, two side walls 42, and a back wall 43. The two side walls 42 extend at right angles to the back wall 43. Each of the four plugs 41, the

two side walls 42, and the back wall 43 are formed integral with one another, preferably in one piece by injection molding. The upper two of the four plugs 41 are configured to be inserted into the corresponding non-illustrated depressions in the lower side of the solid ceiling 3 and the lower two of the four plugs 41 are to be inserted into the two corresponding depressions 21 in the solid floor 2. Preferably, the plugs have a bore 49 with a thread for securably receiving a screw 27, 37 therein.

The open front arch 5 has four plugs 51, two side walls 52, and an upside-down U-shaped front wall 53. Each of the plugs 51, the side walls 52, and the U-shaped front wall 53 are formed integral with one another, preferably by injection molding. The upper two of the four plugs 51 are configured to be inserted into the corresponding non-illustrated depressions in the lower side of the solid ceiling 3 and the lower two of the four plugs 51 are to be inserted into two corresponding depressions 21 in the solid floor 2. Preferably, the plugs have a bore 59 with a thread for securably receiving a screw 27, 37 therein. The open front arch 5 can also have an integral post 54 with a bore therein for receiving another top screw 37 to provide additionally securing support to the center top part of the open front arch 5.

The fixed supporting structure 1 is assembled by inserting the two lowermost plugs 51 of the open front arch 5 into the two front depressions 21 on top of the solid floor 2, and inserting the two lowermost plugs 41 of the solid back wall 4 into the two rear depressions 21 on top of the solid floor 2. At each corner of the solid floor 2, a bottom screw 27 is turned through the bottom of the solid floor 2 and into a respective bottom plug 41, 51 to fixedly and/or permanently secure the plug 41, 51 into its corresponding depression 21. Equivalent fasteners to the screw 27 can also be used. The solid ceiling 3 is placed on top of the open front arch 5 and

the solid back wall 4 such that the two uppermost plugs 51 of the open front arch 5 are inserted into the corresponding two non-illustrated front (with respect to the view of FIG. 1) depressions of the bottom side of the solid ceiling 3, and such that the two uppermost plugs 41 of the solid back wall 4 are inserted into the corresponding two non-illustrated rear depressions of the bottom side of the solid ceiling 3. At each corner of the solid ceiling 3, a top screw 37 is turned through the top side of the solid ceiling 3 and into a respective top plug 41, 51 to fixedly and/or permanently secure the plug 41, 51 into its corresponding depression. Equivalent fasteners to the screw 37 can also be used.

The modular house toy 1 also includes two removable side walls 7, 8. See FIG. 1. Each of the side walls 7, 8 have at least one connection device, preferably, in the form of at least one tongue. In the preferred configuration, each side wall 7, 8 has at least one tongue 71, 72, 73, 81, 82, 83 on each of the four edges of the respective side wall 7, 8. Particularly, each lateral edge has a centrally disposed lateral tongue 71, 81, each lower edge has a lower edge tongue 72, 82 disposed over almost the entirety of the lower edge, and each upper edge has three upper edge tongues 73, 83 evenly spaced on the upper edge as shown in FIG. 1. The lower edge tongue 82 is preferably more than 80 percent as long as entire lower edge of side wall 8, and, particularly, more than 90 percent as long. The lower edge tongue 72 is preferably more than 80 percent as long as the lower edges on either side of the bottom of the door 75, and, particularly, more than 90 percent as long. Each tongue 71, 72, 73, 81, 82, 83 is preferably rectangular, but can take any shape. For example, the center part of the tongue can be longer (in the tongue-extending direction) than the side portions thereof.

The side walls 42 of the solid back wall 4 and the side walls 52 of the open front arch each have a corresponding groove 48, 58 (see FIG. 4) for receiving a respective lateral tongue 71, 81. Similarly, the solid floor 2 has two grooves 722, 822 for receiving a respective lower edge tongue 72, 82. Also, the solid ceiling 3, has non-illustrated grooves corresponding to the shape of the upper edge tongues 73, 83. The side walls 7, 8 can have any number of tongues 71, 72, 73, 81, 82, 83. Preferably, for stability, each side wall 7, 8 has at least two tongues disposed symmetrically on opposing edges of the side wall 7, 8.

The connection of one lateral tongue 71, 81 into a corresponding groove 48, 58 can be seen particularly clearly in FIG. 4. Preferably, the side walls 7, 8 are plastic. Therefore, they are somewhat bendable. Insertion of a side wall 7, 8 is performed by inserting a tongue 71, 72, 73, 81, 82, 83 on one of the edges. Preferably, the tongue 72, 82 is first inserted into the corresponding groove 722, 822. Then, the side wall 7, 8 is slightly bent such that the height and width decreases sufficiently enough to insert the second and subsequent edges. Alternatively, the side wall is simply pressed against the side walls 32, 42, 52 until the tongue 71, 72, 73, 81, 82, 83 snaps into the corresponding groove. A non-illustrated bevel can be added to the tongue for ease of connectivity.

In the preferred embodiment of the side walls 7, 8, one side wall 7 of each module of the modular house toy has a door 75 and another side wall 8 has a window 85. If the solid back wall 4 has a window 45, then the window 85 preferably matches, in configuration, the window 45 in the solid back wall 4. Each side wall 7 has a configuration that can be interchanged with the other side wall 8 in a modular fashion. Additionally, the four edges of an opening defined by three sides of the open front arch 5 and the solid floor 2 can be

equipped with grooves like grooves 48, 58 such that any of the side walls 7, 8 can be inserted into any one of the three apertures of the fixed supporting structure 1 shown in FIGS. 1 and 2.

The following describes an alternative, non-illustrated embodiment of the side wall connector that eliminates many of the tongues and grooves shown in FIG. 1. In the alternative embodiment, the lateral edges of the side walls 7, 8 do not have tongues. With respect to the upper edge of the side walls 7, 8, the upper edge tongues on the side walls 7, 8 are removed and a number of pins, preferably, two, are placed on a side of the side walls facing the inner space 6 and projecting towards the inner space 6. The lower edge flange 72, 82 remains the same as shown in FIG. 1. Accordingly, the non-illustrated grooves in the bottom side of the solid ceiling 3 are removed and one or more flanges projecting from the bottom side of the side walls 32 facing each side wall 7, 8 is added to the solid ceiling 3, preferably, slightly back (i.e., towards the center of the inner space 6) from the side opening housing the side wall 7, 8. The flanges project downward towards the solid floor 2. Each flange has an approximately rectangular shape and includes at least one aperture for receiving a respective one of the pins projecting from the side walls 7, 8. Preferably, one flange projects downwards and has two symmetrically spaced pin holes with an inner shape corresponding to an outer shape of a pin. To place such a side wall 7, 8 onto the fixed supporting structure 1, the lower edge tongue 72 is inserted into the groove 722 and the pins are inserted into the pin holes. Another integral magnet/ferrum pair 25, 26 can be placed at the pin/flange location for providing an additional securing force or as a replacement for the pin and pinhole connector.

Any other suitable equivalent connector for the side walls 7, 8 can be used to secure a side wall 7, 8 to the fixed supporting structure 1 so long as the side walls 7, 8 remain easily secured to and easily removed from the apertures.

A fully-assembled fixed supporting structure 1 with two side walls 7, 8 in place is shown in FIG. 2. Also shown is an example roof structure 9 to be placed on top of the solid ceiling 3 of the fixed supporting structure 1.

The invention is configured so that multiple fixed supporting structures 1 can be attached to each other to form a plurality of structures 1 in any configuration desired by the user. For example, four structures 1 can be disposed in a row to form a four-room single level house. Four structures 1 also can be disposed as a square duplex with two adjacent structures 1 below and two adjacent structures 1 above. Alternatively, four structures can be disposed as a two-level house with three adjacent structures 1 below and one structure 1 above. FIG. 3 depicts a two-level house made of three structures 1 where two lower structures 1A, 1B are placed adjacent one another and one structure 1C is disposed on top of the lower structure 1A.

To attach a first fixed supporting structure 1C on top of a second fixed supporting structure 1A, as shown in FIG. 3, the first structure 1C is placed upon the second structure 1A such that the flanges 31, extending upward from the top side of the solid ceiling 3A of the second structure 1A, are inserted into four non-illustrated grooves on the bottom side of the solid floor 2C of the first structure 1C. The bottom side of a solid floor 2 can have any device or means for securing the solid floor 2 to the lower disposed solid ceiling 3. A groove corresponding to the flanges 31, as set forth above, is preferred. Alternatively, the solid floor 2 can have a grating underneath with groove-like cutouts for accommodating the flanges 31. In another alternative to the

flanges 31 for attaching a roof section 9 or a second modular house toy 1 to a first modular house toy 1, the solid ceiling 3 can have vertically-extending plugs corresponding to the upper plugs 51 of the open front arch 5 and the upper plugs 41 of the solid back wall 4. In the alternative embodiment, the solid floor 2 has four depressions on the non-illustrated underside (corresponding to the depressions 21 shown on the upper side of the solid floor 2) for receiving the vertically-extending plugs. Such plugs provide substantial support for a roof section 9 or a second story structure 1. Other alternative equivalent connection embodiments are also possible so long as the roof structure 9 or other supporting structure 1 remain easily secured to and easily removed from the other supporting structure 1. Additionally, a ceiling 3 can have magnets 25 and a floor 2 can have ferrums 26 (or vice-versa) for additional releasably-connective support of two supporting structures 1A, 1C.

Each of the features and alternatives for connecting one structure 1C on top of another structure can be reproduced for the bottom side of the roof structure 9. While the roof structure 9 is depicted as a conventional gabled roof, the roof structure can take any shape. For example, the roof can be in the form of a sun deck.

To attach a third fixed supporting structure 1B immediately adjacent to the second fixed supporting structure 1A, the third structure 1B is placed next to the second structure 1A such that, preferably, two projections 24, 34 on a left side of the third structure 1B (one upper and one lower) are inserted into two cavities 23, 33 on a right side of the second structure 1A (one upper and one lower) and two projections 24, 34 on the right side of the second structure 1A (one upper and one lower) are inserted into two cavities 23, 33 on the left side of the third structure 1B (one upper and one lower). The cavities 23, 33 and the projections 24,

34 are shaped preferably to provide both a form lock and a force lock to keep the two adjacent fixed supporting structures 1A, 1B together as set forth above. The magnets 25, 35 inside the cavities 23, 33 and the ferrums 26, 36 inside the projections 24, 34 are mutually attracted to provide an additional holding force that keeps the two fixed supporting structures 1A, 1B together.

Either the user or the manufacturer can assemble the fixed supporting structure 1, including the solid floor 2, the solid ceiling 3, the solid back wall 4, and the open front arch 5. Preferably, the magnets 25, 35 are fixedly and/or permanently secured into corresponding recesses 29 and the ferrums 26, 36 are fixedly and/or permanently secured into other corresponding recesses 29 by the manufacturer. Alternatively, the magnets 25, 35 and ferrums 26, 36 can be installed by the user.

FIG. 5 shows a preferred embodiment of fixed supporting structure 1 as a bathroom. The bathroom is shown with a solid floor 2, a solid ceiling 3, a solid back wall 4, a side wall 8 with a window 85, and a roof structure 9. The side wall 7 and the open front arch 5 are not shown for the sake of clarity. The bathroom is shown with a bathtub 501, a toilet 502, a sink cabinet 503, and a medicine cabinet/vanity 504, for example.

FIG. 6 shows a preferred embodiment of fixed supporting structure 1 as a kitchen. The kitchen is shown with a solid floor 2, a solid ceiling 3, a solid back wall 4, a side wall 8 with a window 85, and a roof structure 9. The side wall 7 and the open front arch 5 are not shown for the sake of clarity. The kitchen is shown with a refrigerator 601, sink cabinet 602, stove 603, counter 604, microwave 605, and cabinetry 606, for example.

FIG. 7 shows a preferred embodiment of fixed supporting structure 1 as a living room. The living room is shown with a solid floor 2, a solid ceiling 3, a solid back wall 4, a side

wall 8 with a window 85, and a roof structure 9. The side wall 7 and the open front arch 5 are not shown for the sake of clarity. The living room is shown with a fireplace 701 and an entertainment center 702, for example.

FIG. 8 shows a preferred embodiment of fixed supporting structure 1 as a nursery. The nursery is shown with a solid floor 2, a solid ceiling 3, a solid back wall 4, a side wall 8 with a window 85, and a roof structure 9. The side wall 7 and the open front arch 5 are not shown for the sake of clarity. The nursery is shown with a crib 801 and a teddy bear light switch 802, for example.

FIG. 9 shows a preferred embodiment of fixed supporting structure 1 as a dining room. The dining room is shown with a solid floor 2, a solid ceiling 3, a solid back wall 4, a side wall 7 with a door 75, and a roof structure 9. The side wall 8 and the open front arch 5 are not shown for the sake of clarity. The dining room is shown with two dining hutches 901, for example.

FIG. 10 shows a preferred embodiment of fixed supporting structure 1 as a master bedroom. The master bedroom is shown with a solid floor 2, a solid ceiling 3, a solid back wall 4, a side wall 8, and a roof structure 9. The side wall 7 and the open front arch 5 are not shown for the sake of clarity. The master bedroom is shown with an end table with radio 1001, an end table with telephone 1002, and a bed 1003, for example.

Other alternative examples of the fixed supporting structure include, for example, a bedroom, a garage, an entertainment room, a gym or workout room, a foyer, and a sun room.

Claims:

1. A modular house toy, comprising:

a solid floor;

a solid ceiling;

a solid back wall connecting said floor to said ceiling; and

an open arch connecting said floor to said ceiling.

2. The toy according to claim 1, wherein:

said back wall permanently connects said floor to said ceiling; and

said arch permanently connects said floor to said ceiling.

3. The toy according to claim 1, wherein:

said back wall connects said floor to said ceiling in a first vertical connection plane; and

said arch connects said floor to said ceiling in a second vertical connection plane different from said first vertical connection plane.

4. The toy according to claim 3, wherein:

said back wall permanently connects said floor to said ceiling in said first vertical connection plane; and

said arch permanently connects said floor to said ceiling in said second vertical connection plane.

5. The toy according to claim 1, wherein:

said floor has floor depressions;

said ceiling has ceiling depressions;

said back wall has wall extensions;

at least one of said wall extensions is inserted into at least one of said floor depressions and at least one of said wall extensions is inserted into at least one of said ceiling depressions to permanently connect said floor to said ceiling;

said arch has arch extensions; and

at least one of said arch extensions is inserted into at least one of said floor depressions and at least one of said arch extensions is inserted into at least one of said ceiling depressions to permanently connect said floor to said ceiling.

6. The toy according to claim 5, wherein:

said floor depressions include four floor depressions;

said ceiling depressions include four ceiling depressions;

said back wall has two upper wall extensions and two lower wall extensions;

said two lower wall extensions are inserted into two of said four floor depressions and said two upper wall extensions are inserted into two of said four ceiling depressions to permanently connect said floor to said ceiling;

said arch has two upper arch extensions and two lower arch extensions; and

said two lower arch extensions are inserted into two of said floor depressions and said two upper arch extensions are inserted into two of said ceiling depressions to permanently connect said floor to said ceiling.

7. The toy according to claim 1, wherein

said floor has a top side with two pairs of floor depressions;

said ceiling has a bottom side with two pairs of ceiling depressions;

said back wall has:

two lower wall extensions inserted into a first of said two pairs of floor depressions; and

two upper wall extensions inserted into a first of said two pairs of ceiling depressions to permanently connect said floor to said ceiling in a first vertical connection plane; and

said arch has:

two lower arch extensions inserted into a second of said two pairs of floor depressions; and

two upper arch extensions inserted into a second of said two pairs of ceiling depressions to permanently connect said floor to said ceiling in a second vertical connection plane different from said first vertical connection plane.

8. The toy according to claim 1, wherein said floor is a one-piece, injection molded part.

9. The toy according to claim 1, wherein said floor has a square shape.

10. The toy according to claim 5, wherein said floor has four top side corners and one of said floor depressions is disposed in each of said four top side corners.

11. The toy according to claim 1, wherein:

said floor has:

a top side; and

four side walls formed in one piece with said top side.

12. The toy according to claim 1, wherein:

said floor has four side walls; and

each of said four side walls has a cavity and a projection.

13. The toy according to claim 12, wherein:

each cavity has a rectangular shape; and

each projection has a rectangular shape corresponding to said rectangular shape of said cavity.

14. The toy according to claim 12, wherein:

each cavity has a cavity recess;

each projection has a projection recess; and

a fastener is disposed in each of said cavity recess and said projection recess.

15. The toy according to claim 14, wherein said fastener is a magnet and ferrum pair.

16. The toy according to claim 12, wherein said cavity and said projection are staggered around said four side walls.

17. The toy according to claim 1, wherein said ceiling is a one-piece, injection molded part.

18. The toy according to claim 1, wherein said ceiling has a square shape.

19. The toy according to claim 18, wherein said floor has a shape corresponding to said square shape of said ceiling.

20. The toy according to claim 5, wherein said ceiling has four bottom side corners and one of said ceiling

depressions is disposed in each of said four bottom side corners.

21. The toy according to claim 1, wherein:

said ceiling has:

a top side; and

four side walls formed in one piece with said top side.

22. The toy according to claim 1, wherein:

said ceiling has four side walls; and

each of said four side walls 32 has a cavity and a projection.

23. The toy according to claim 22, wherein:

each cavity has a rectangular shape; and

each projection has a rectangular shape corresponding to said rectangular shape of said cavity.

24. The toy according to claim 22, wherein:

each cavity has a cavity recess

each projection has a projection recess; and

a fastener is disposed in each of said cavity recess and said projection recess.

25. The toy according to claim 24, wherein said fastener is a magnet and ferrum pair.

26. The toy according to claim 1, wherein:

said floor has floor depressions;

said ceiling has ceiling depressions identical in shape to said floor depressions.

27. The toy according to claim 22, wherein said cavity and said projection are staggered around said four side walls.

28. The toy according to claim 22, wherein:

said floor has four floor side walls;

each of said four floor side walls has a floor cavity and a floor projection; and

said cavity and said projection are staggered with respect to said floor cavity and said floor projection.

29. The toy according to claim 1, wherein:

said ceiling has:

a top side; and

four side walls; and

said four side walls and said top side form a one-piece open box.

30. The toy according to claim 29, including plate connected to said open box and closing said open box.

31. The toy according to claim 1, wherein:

said ceiling has a top side defining a plane; and

said top side has at least one flange projecting transverse to said plane.

32. The toy according to claim 31, wherein:

said top side has four edges;

said at least one flange is four flanges; and

each of said four flanges projects transversely to said plane in the vicinity of a respective one of said four edges.

33. The toy according to claim 31, wherein:

said top side has four edges;

said at least one flange is four pairs of flanges; and

each of said pairs project transversely to said plane the vicinity of a respective one of said four edges.

34. The toy according to claim 1, wherein:

said ceiling has a top side; and

a roof is removably connected to said top side.

35. The toy according to claim 34, wherein:

said top side has:

four edges; and

flanges projecting from said top side; and

said roof is connected to said top side by said flanges.

36. The toy according to claim 5, wherein:

said floor depressions are four floor depressions;

said ceiling depressions are four ceiling depressions;

said wall extensions are four wall extensions;

said arch extensions are four arch extensions;

a pair of said four wall extensions is inserted into two of said floor depressions and another pair of said four wall extensions is inserted into two of said ceiling depressions to permanently connect said floor to said ceiling; and

a pair of said four arch extensions is inserted into two of said floor depressions and another pair of said four arch extensions is inserted into two of said ceiling depressions to permanently connect said floor to said ceiling.

37. The toy according to claim 5, wherein said wall extensions have a bore with a thread for receiving a screw.

38. The toy according to claim 1, wherein said back wall is a one-piece, injection molded part.

39. The toy according to claim 1, wherein said back wall has a solid window.

40. The toy according to claim 1, wherein said back wall has a shuttered window.

41. The toy according to claim 1, wherein said arch has:

two side walls; and

an upside-down-U-shaped front wall.

42. The toy according to claim 1, wherein said arch is a one-piece, injection molded part.

43. The toy according to claim 5, wherein each of said arch extensions have a bore with a thread for receiving a screw.

44. The toy according to claim 1, wherein said arch has a post with a bore for receiving a screw.

45. The toy according to claim 1, wherein:

said floor, said ceiling, and at least one of said back wall and said arch define a side opening; and

a side wall is removably connected at said side opening.

46. The toy according to claim 45, wherein said side wall has at least one connector for removably securing said side wall at said side opening.

47. The toy according to claim 46, wherein said at least one connector is at least one tongue.

48. The toy according to claim 46, wherein:

said side wall has four edges;

said at least one connector is at least four tongues; and

at least one of said at least four tongues is disposed in the vicinity of each of said four edges.

49. The toy according to claim 47, wherein at least one of said floor, said ceiling, said back wall, and said arch has a groove corresponding to said at least one tongue.

50. The toy according to claim 47, wherein:

said at least one tongue is at least four tongues; and

each of said floor, said ceiling, said back wall, and said arch has at least one groove corresponding to at least one of said at least four tongues.

51. The toy according to claim 45, wherein said side wall is a one-piece, injection molded part.

52. The toy according to claim 45, wherein said side wall has a solid window.

53. The toy according to claim 45, wherein said side wall has a shuttered window.

54. The toy according to claim 45, wherein said side wall has a door.

55. The toy according to claim 45, wherein:

said back wall has:

four plugs;

two side walls; and

a rear wall.

56. The toy according to claim 55, wherein said rear wall extends at right angles to each of said two side walls.

57. The toy according to claim 55, wherein said four plugs, said two side walls, and said rear wall are formed as a one-piece injection molded part.

58. The toy according to claim 45, wherein said side wall is at least two interchangeable side walls.

59. A modular house toy, comprising:

a solid floor;

a solid ceiling;

a solid back wall permanently connecting said floor to said ceiling; and

an open arch permanently connecting said floor to said ceiling.

60. A modular house toy, comprising:

a solid floor;

a solid ceiling;

a solid back wall permanently connecting said floor to said ceiling in a first vertical connection plane; and

an open arch permanently connecting said floor to said ceiling in a second vertical connection plane different from said first vertical connection plane.

61. A modular house toy, comprising:

a solid floor having floor depressions;

a solid ceiling having ceiling depressions;

a solid back wall having wall extensions, at least one of said wall extensions inserted into at least one of said floor depressions and at least one of said wall extensions inserted into at least one of said ceiling depressions to connect said floor to said ceiling; and

an open arch having arch extensions, at least one of said arch extensions inserted into at least one of said floor

depressions and at least one of said arch extensions inserted into at least one of said ceiling depressions to connect said floor to said ceiling.

62. A modular house toy, comprising:

a solid floor having floor depressions;

a solid ceiling having ceiling depressions;

a solid back wall having wall extensions, at least one of said wall extensions inserted into at least one of said floor depressions and at least one of said wall extensions inserted into at least one of said ceiling depressions to permanently connect said floor to said ceiling in a first vertical connection plane; and

an open arch having arch extensions, at least one of said arch extensions inserted into at least one of said floor depressions and at least one of said arch extensions inserted into at least one of said ceiling depressions to permanently connect said floor to said ceiling in a second vertical connection plane different from said first vertical connection plane.

63. A modular house toy, comprising:

a solid floor having a top side with two pairs of floor depressions;

a solid ceiling having a bottom side with two pairs of ceiling depressions;

a solid back wall having:

two lower wall extensions inserted into a first of said two pairs of floor depressions; and

two upper wall extensions inserted into a first of said two pairs of ceiling depressions to permanently connect said floor to said ceiling in a first vertical connection plane; and

an open arch having:

two lower arch extensions inserted into a second of said two pairs of floor depressions; and

two upper arch extensions inserted into a second of said two pairs of ceiling depressions to permanently connect said floor to said ceiling in a second vertical connection plane different from said first vertical connection plane.

64. A modular house toy, comprising:

a solid floor having floor depressions;

a solid ceiling having ceiling depressions;

a solid back wall having wall extensions, at least one of said wall extensions inserted into at least one of said floor depressions and at least one of said wall extensions inserted into at least one of said ceiling depressions to connect said floor to said ceiling;

an open arch having arch extensions, at least one of said arch extensions inserted into at least one of said floor

depressions and at least one of said arch extensions inserted into at least one of said ceiling depressions to connect said floor to said ceiling; and

said floor having a first given shape, said ceiling having said first given shape, said back wall having a second given shape, and said arch having said second given shape, to allow repetitious and modular interlocking of the modular house toy to another module house toy.

65. A modular house toy configuration, comprising:

at least first and second fixed supporting structures each having:

a solid floor;

a solid ceiling;

a solid back wall connecting said floor to said ceiling;

an open arch connecting said floor to said ceiling; and

said first fixed supporting structure removably connected to said second fixed supporting structure.

66. The toy configuration according to claim 65, wherein:

said back wall permanently connects said floor to said ceiling; and

said arch permanently connects said floor to said ceiling.

67. The toy configuration according to claim 65, wherein:

said back wall connects said floor to said ceiling in a first vertical connection plane; and

said arch connects said floor to said ceiling in a second vertical connection plane different from said first vertical connection plane.

68. The toy configuration according to claim 65, wherein:

said back wall has wall extensions;

at least one of said wall extensions is inserted into at least one of said floor depressions and at least one of said wall extensions inserted into at least one of said ceiling depressions to permanently connect said floor to said ceiling;

said arch has arch extensions; and

at least one of said arch extensions is inserted into at least one of said floor depressions and at least one of said arch extensions is inserted into at least one of said ceiling depressions to permanently connect said floor to said ceiling.

69. The toy configuration according to claim 65, wherein:

said floor has a top side with two pairs of floor depressions;

said ceiling has a bottom side with two pairs of ceiling depressions;

said back wall has:

two lower wall extensions inserted into a first of said two pairs of floor depressions; and

two upper wall extensions inserted into a first of said two pairs of ceiling depressions to permanently connect said solid floor to said solid ceiling in a first vertical connection plane; and

said arch has:

two lower arch extensions inserted into a second of said two pairs of floor depressions; and

two upper arch extensions inserted into a second of said two pairs of ceiling depressions to permanently connect said floor to said ceiling in a second vertical connection plane different from said first vertical connection plane.

70. The toy configuration according to claim 65, wherein:

said floor of said first fixed supporting structure has a first floor shape;

said floor of said second fixed supporting structure has a second floor shape substantially identical to said first floor shape;

said ceiling of said first fixed supporting structure has a first ceiling shape;

said ceiling of said second fixed supporting structure has second ceiling shape substantially identical to said first ceiling shape;

said back wall of said first fixed supporting structure has a first back wall shape;

said back wall of said second fixed supporting structure has a second back wall shape substantially identical to said first back wall shape;

said arch of said first fixed supporting structure has a first arch shape; and

said arch of said second fixed supporting structure has a second arch shape substantially identical to said first arch shape.

71. The toy configuration according to claim 65, wherein:

said floor of said first fixed supporting structure has an exterior shape;

said floor of said second fixed supporting structure has a second exterior shape substantially identical to said exterior shape;

said ceiling of said first fixed supporting structure has a third exterior shape substantially identical to said exterior shape; and

said ceiling of said second fixed supporting structure has fourth exterior shape substantially identical to said exterior shape.

72. The toy configuration according to claim 65, wherein:

said back wall of said first fixed supporting structure has an exterior shape;

said back wall of said second fixed supporting structure has a second exterior shape substantially identical to said exterior shape;

said arch of said first fixed supporting structure has a third exterior shape substantially identical to said exterior shape; and

said arch of said second fixed supporting structure has fourth exterior shape substantially identical to said exterior shape.

73. The toy configuration according to claim 65, wherein:

said ceiling of said first fixed supporting structure has four first side walls each with a first cavity and a first projection;

said ceiling of said second fixed supporting structure has four second side walls each with a second cavity and a second projection; and

said first projection is removably inserted into said second cavity and said second projection is removably inserted into said first cavity when said ceiling of said

first fixed supporting structure is placed adjacent said ceiling of said second fixed supporting structure.

74. The toy configuration according to claim 65, wherein:

said floor of said first fixed supporting structure has four first floor side walls each with a first floor cavity and a first floor projection;

said ceiling of said first fixed supporting structure has four first ceiling side walls each with a first ceiling cavity and a first ceiling projection;

said floor of said second fixed supporting structure has four second floor side walls each with a second floor cavity and a second floor projection;

said ceiling of said second fixed supporting structure has four second ceiling side walls each with a second ceiling cavity and a second ceiling projection; and

when said floor of said first fixed supporting structure is placed immediately adjacent said floor of said second fixed supporting structure and said ceiling of said first fixed supporting structure is simultaneously placed immediately adjacent said ceiling of said second fixed supporting structure:

said first floor projection, said second floor projection, said first ceiling projection, and said second ceiling projection are simultaneously removably inserted into a respective one of said second floor cavity, said first floor cavity, said second ceiling cavity, and said first ceiling cavity.

75. The toy configuration according to claim 65, wherein:

said at least first and second fixed supporting structures are a plurality of fixed supporting structures; and

each of said plurality of fixed supporting structures is removably connected to another of said plurality of fixed supporting structures.

76. The toy configuration according to claim 65, wherein:

said first fixed supporting structure is a cube having a given length, a given width, and a given height; and

said second fixed supporting structure is a cube having said given length, said given width, and said given height.

77. The toy configuration according to claim 76, wherein said first fixed supporting structure has six sides and is removably connectable to said second fixed supporting structure at every one of said six sides.

78. The toy configuration according to claim 77, wherein each of said first and second fixed supporting structures have six sides and one of said first and second fixed supporting structures is removably connectable to another of said first and second fixed supporting structures at every one of said six sides.

79. The toy configuration according to claim 65, wherein said ceiling has a top side with a connector for releasably

connecting another of said fixed supporting structures on said top side.

80. The toy configuration according to claim 79, wherein:

said floor has a bottom side; and

said connector releasably connects a top side of one of said fixed supporting structures to said bottom side of another of said fixed supporting structures.

81. The toy configuration according to claim 80, wherein:

said connector has two parts;

a first of said two parts is disposed on said top side; and

a second of said two parts is disposed on said bottom side.

82. The toy configuration according to claim 81, wherein:

a first of said two parts is a flange; and

a second of said two parts is a groove.

83. The toy configuration according to claim 81, wherein:

a first of said two parts is a rectangular stud having a given length, a given width, and a given height; and

a second of said two parts is a receptacle having said given length, said given width, and said given height.

84. The toy configuration according to claim 79, wherein said connector is at least one flange.

85. The toy configuration according to claim 84, wherein said at least one flange is at least four flanges.

86. The toy configuration according to claim 84, wherein said at least one flange is eight flanges.

87. The toy configuration according to claim 65, wherein:

said ceiling has a top side; and

a roof is removably connected to said top side.

88. The toy configuration according to claim 65, wherein:

said ceiling has a top side with a connector;

a roof is removably connected to said top side by said connector.

89. The toy configuration according to claim 88, wherein:

said connector is flanges projecting from said top side; and

said roof is removably connected to said top side by said flanges.

90. A modular house toy configuration, comprising:

at least first and second fixed supporting structures each having:

a solid floor;

a solid ceiling;

a solid back wall permanently connecting said floor to said ceiling;

an open arch permanently connecting said floor to said ceiling; and

said first fixed supporting structure removably connected to said second fixed supporting structure.

91. A modular house toy configuration, comprising:

at least first and second fixed supporting structures each having:

a solid floor;

a solid ceiling;

a solid back wall permanently connecting said floor to said ceiling in a first vertical connection plane;

an open arch permanently connecting said floor to said ceiling in a second vertical connection plane different from said first vertical connection plane; and

said first fixed supporting structure removably connected to said second fixed supporting structure.

92. A modular house toy configuration, comprising:

at least first and second fixed supporting structures each having:

a solid floor having floor depressions;

a solid ceiling having ceiling depressions;

a solid back wall having wall extensions, at least one of said wall extensions inserted into at least one of said floor depressions and at least one of said wall extensions inserted into at least one of said ceiling depressions to connect said floor to said ceiling;

an open arch having arch extensions, at least one of said arch extensions inserted into at least one of said floor depressions and at least one of said arch extensions inserted into at least one of said ceiling depressions to connect said floor to said ceiling; and

said first fixed supporting structure removably connected to said second fixed supporting structure.

93. A modular house toy configuration, comprising:

at least first and second fixed supporting structures each having:

a solid floor having floor depressions;

a solid ceiling having ceiling depressions;

a solid back wall having wall extensions, at least one of said wall extensions inserted into at least one of said floor depressions and at least one of said wall extensions inserted into at least one of said ceiling depressions to permanently connect said floor to said ceiling in a first vertical connection plane;

an open arch having arch extensions, at least one of said arch extensions inserted into at least one of said floor depressions and at least one of said arch extensions inserted into at least one of said ceiling depressions to permanently connect said floor to said ceiling in a second vertical connection plane different from said first vertical connection plane; and

said first fixed supporting structure removably connected to said second fixed supporting structure.

94. A modular house toy configuration, comprising:

at least first and second fixed supporting structures each having:

a solid floor having a top side with two pairs of floor depressions;

a solid ceiling having a bottom side with two pairs of ceiling depressions;

a solid back wall having:

two lower wall extensions inserted into a first of said two pairs of floor depressions; and

two upper wall extensions inserted into a first of said two pairs of ceiling depressions to permanently connect said floor to said ceiling in a first vertical connection plane; and

an open arch having:

two lower arch extensions inserted into a second of said two pairs of floor depressions;

two upper arch extensions inserted into a second of said two pairs of ceiling depressions to permanently connect said floor to said ceiling in a second vertical connection plane different from said first vertical connection plane; and

said first fixed supporting structure removably connected to said second fixed supporting structure.

95. A modular house toy configuration, comprising:

at least first and second fixed supporting structures each having:

a solid floor having floor depressions;

a solid ceiling having ceiling depressions;

a solid back wall having wall extensions, at least one of said wall extensions inserted into at least one of said floor depressions and at least one of said wall

extensions inserted into at least one of said ceiling depressions to connect said floor to said ceiling;

an open arch having arch extensions, at least one of said arch extensions inserted into at least one of said floor depressions and at least one of said arch extensions inserted into at least one of said ceiling depressions to connect said floor to said ceiling;

said floor having a first given shape, said ceiling having said first given shape, said back wall having a second given shape, and said arch having said second given shape, to allow repetitious and modular interlocking of said first fixed supporting structure to said second fixed supporting structure; and

said first fixed supporting structure removably connected to said second fixed supporting structure.

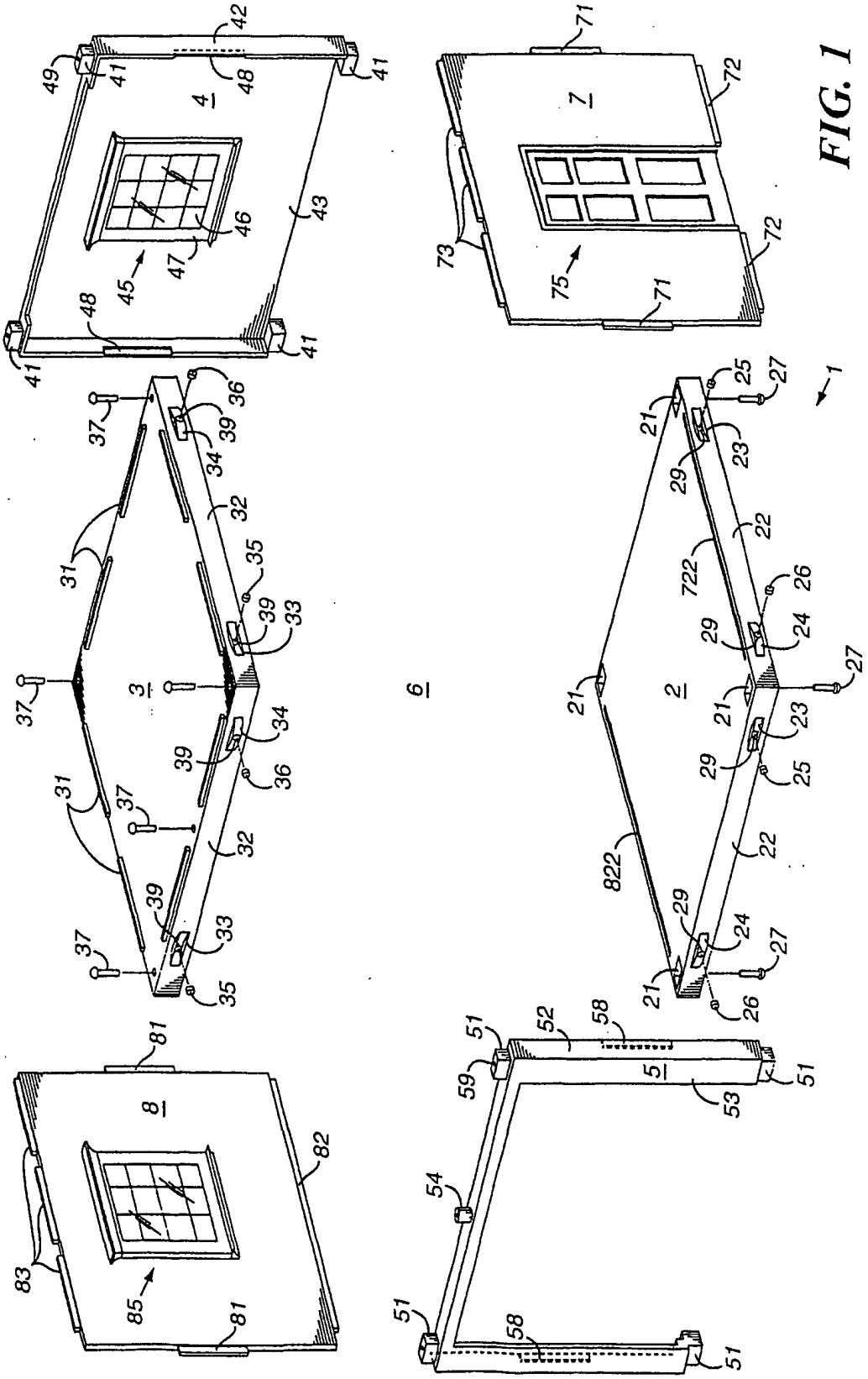

FIG. 1

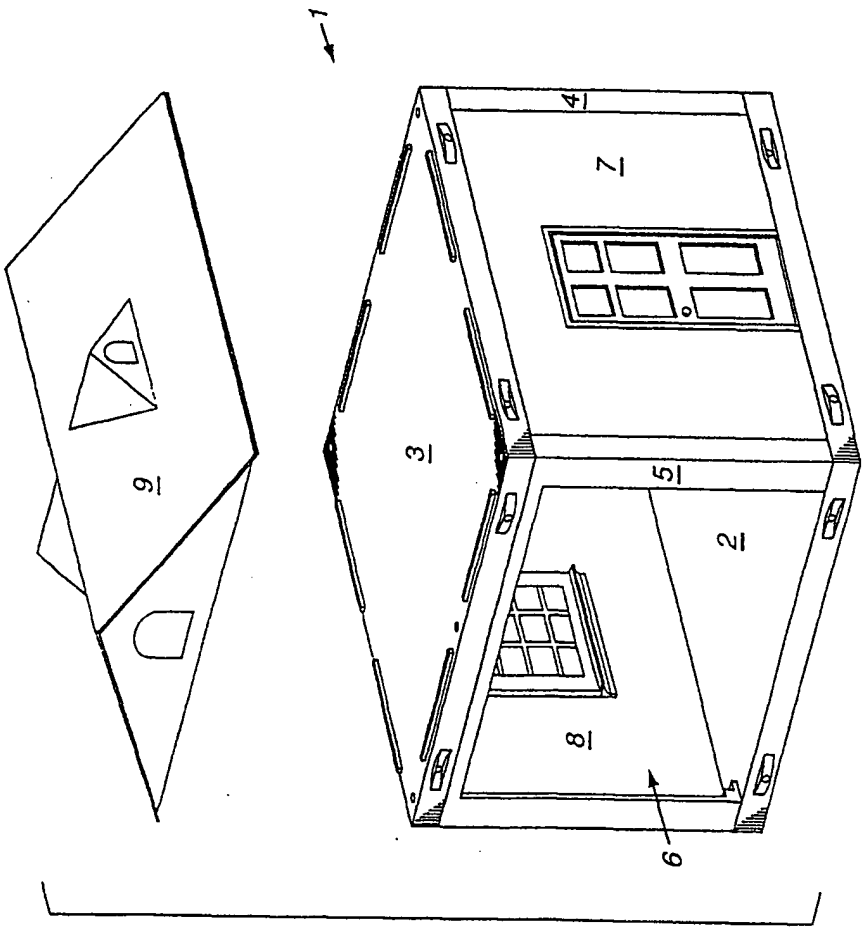

FIG. 2

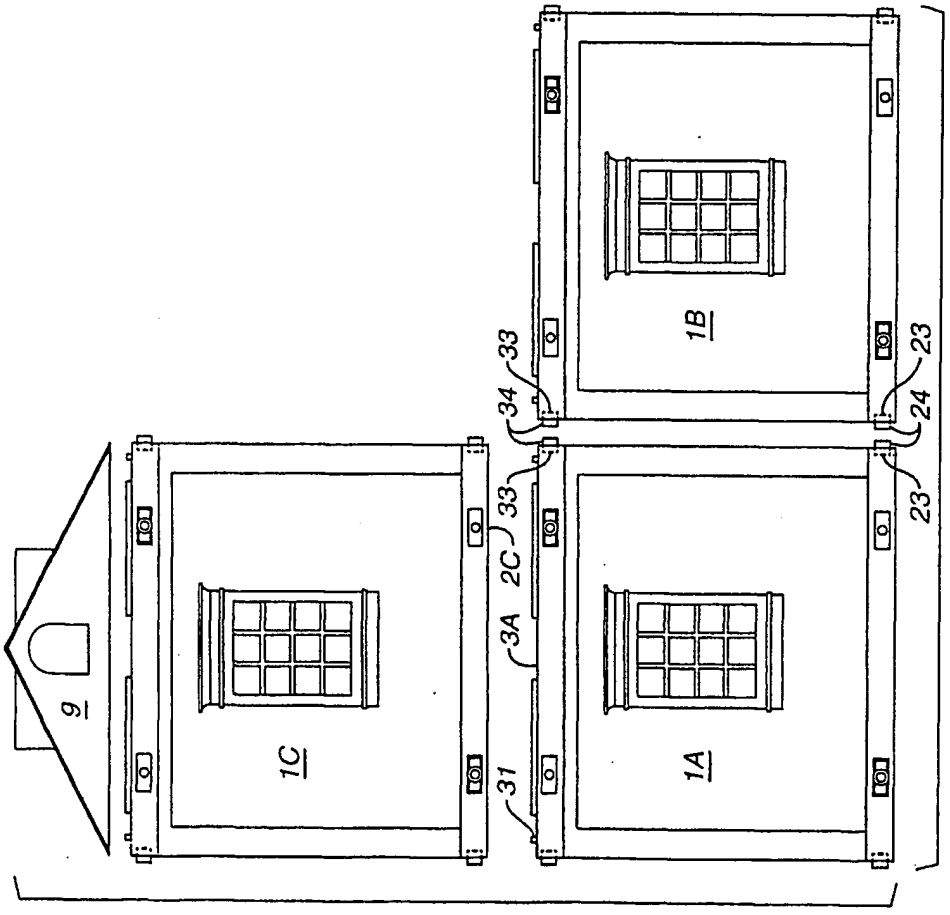

FIG. 3

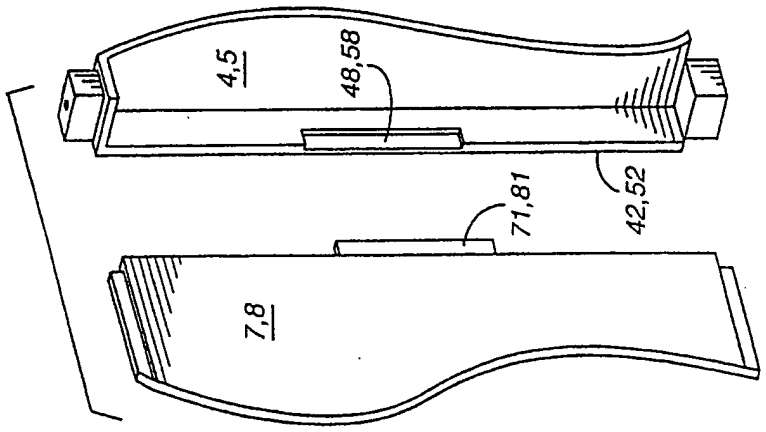

FIG. 4

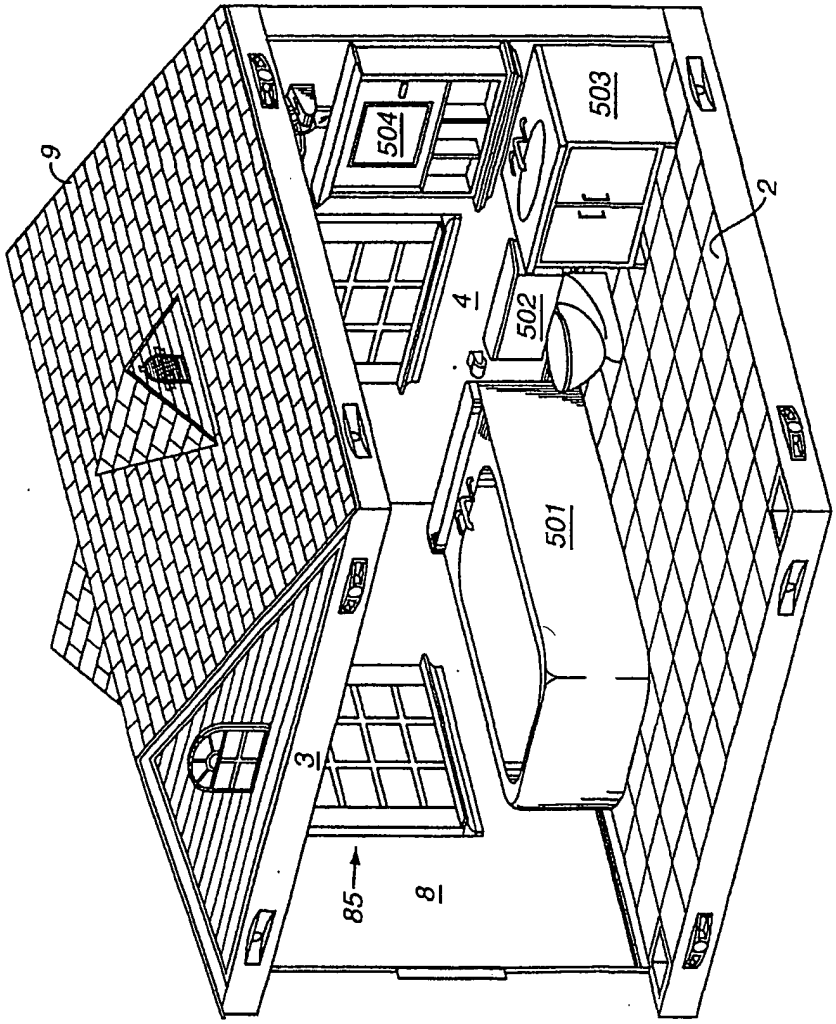

FIG. 5

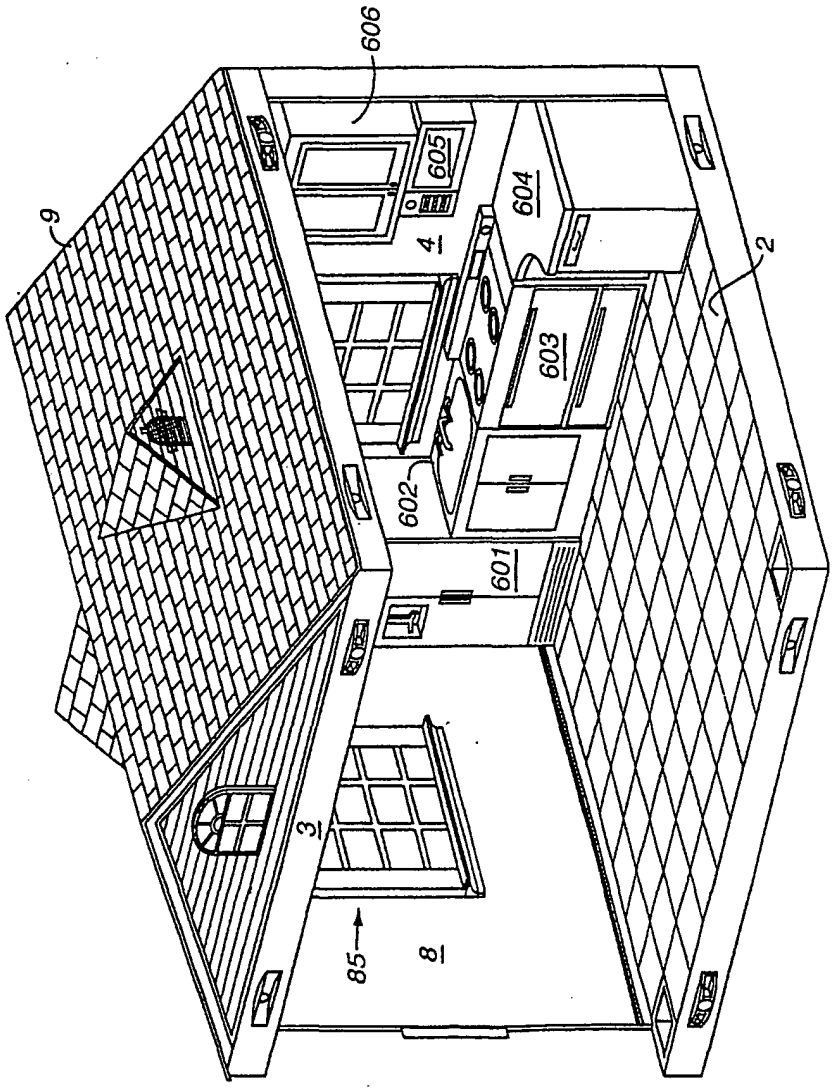

FIG. 6

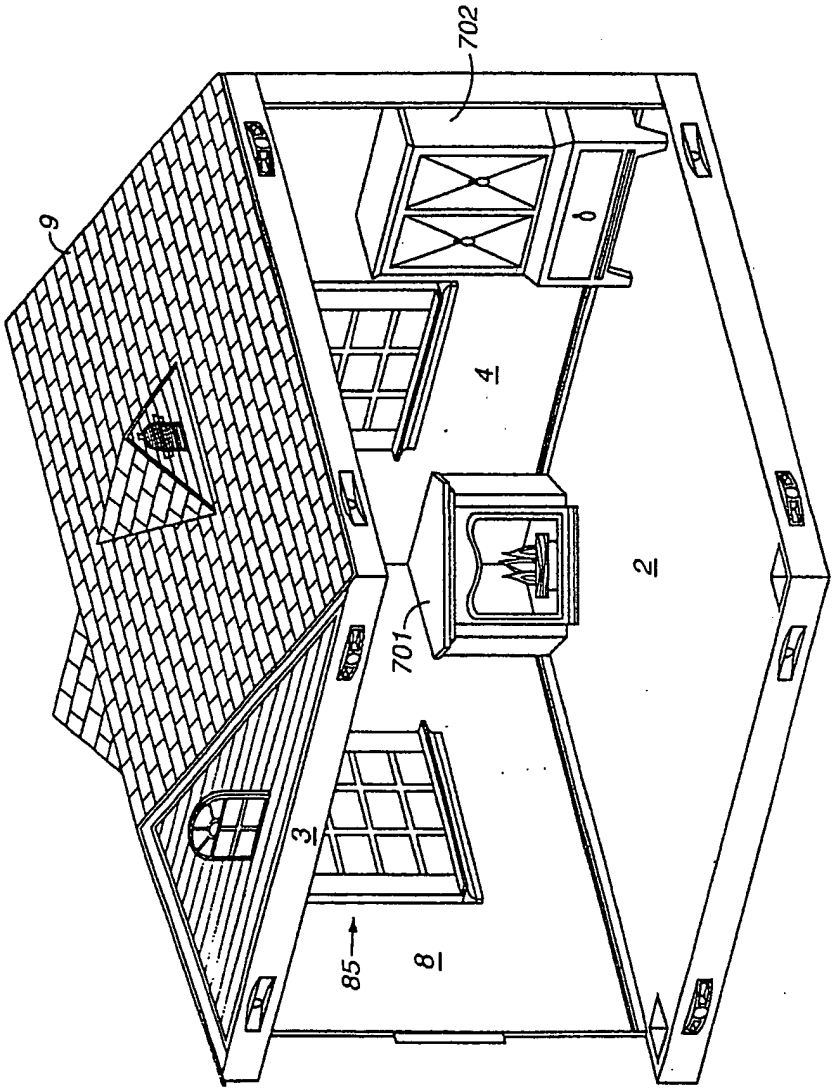

FIG. 7

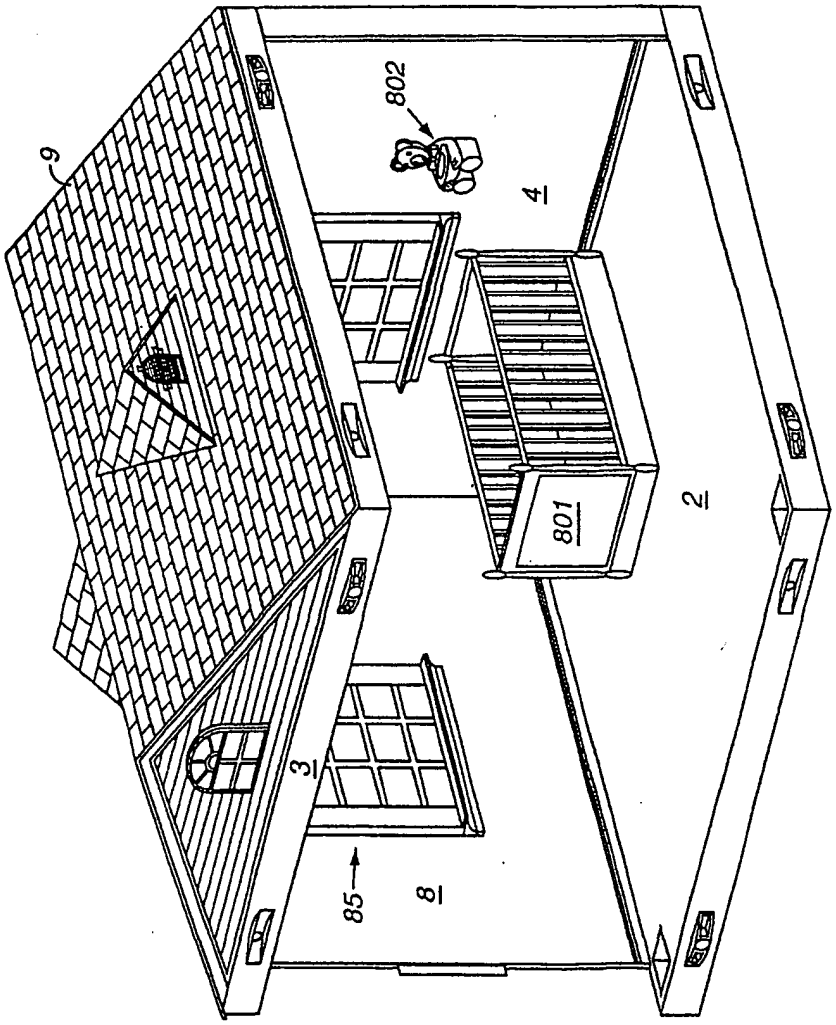

FIG. 8

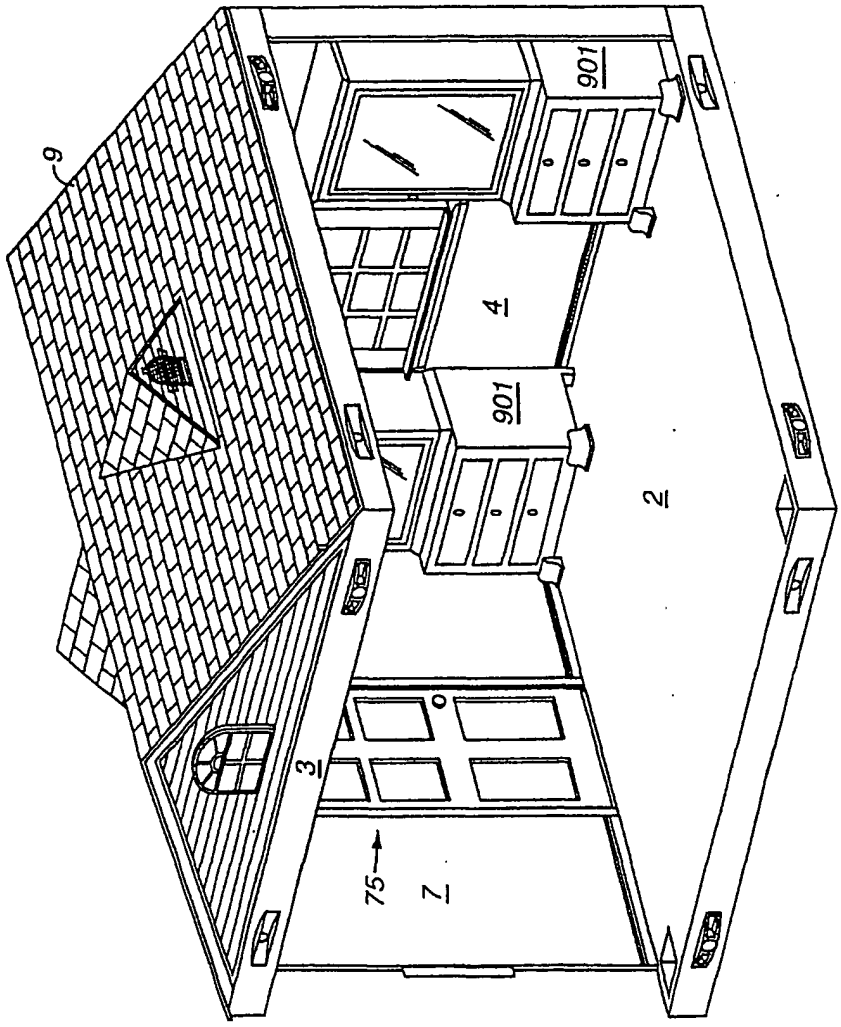

FIG. 9

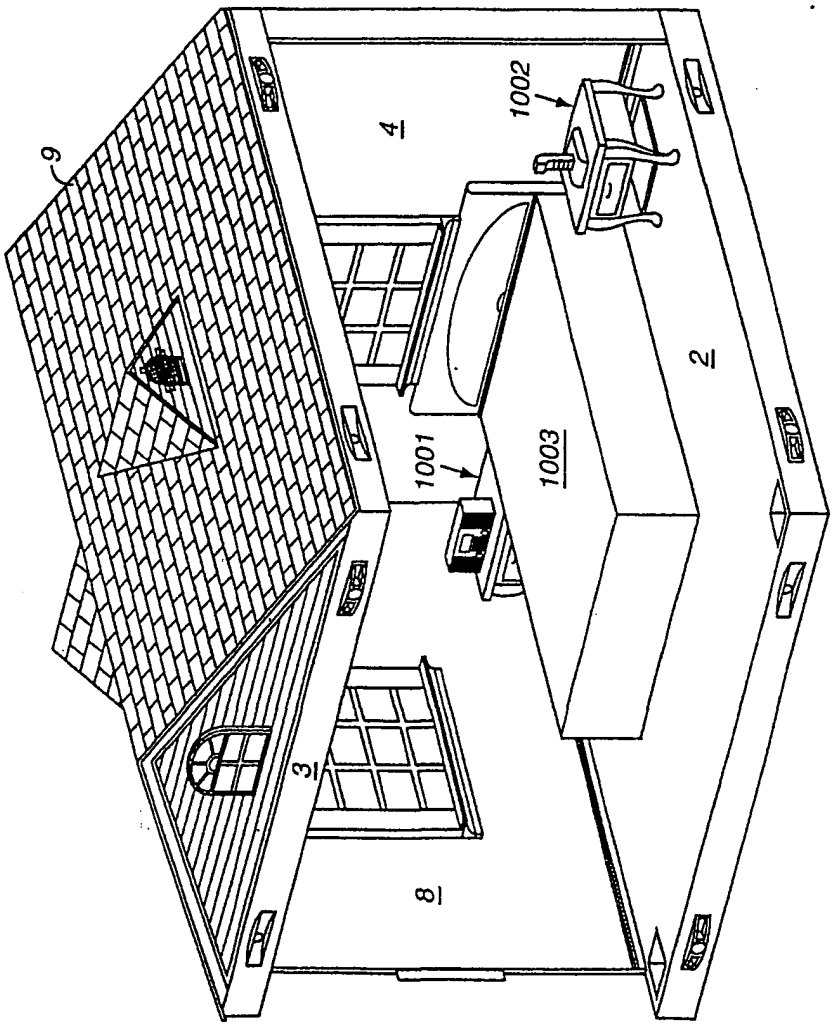

FIG. 10